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⑪ Publication number : **0 519 896 A1**

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## EUROPEAN PATENT APPLICATION

⑬ Application number : **92850147.7**

⑮ Int. Cl.<sup>5</sup> : **B65D 33/16**

⑭ Date of filing : **17.06.92**

⑯ Priority : **20.06.91 SE 9101911**

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⑰ Date of publication of application :  
**23.12.92 Bulletin 92/52**

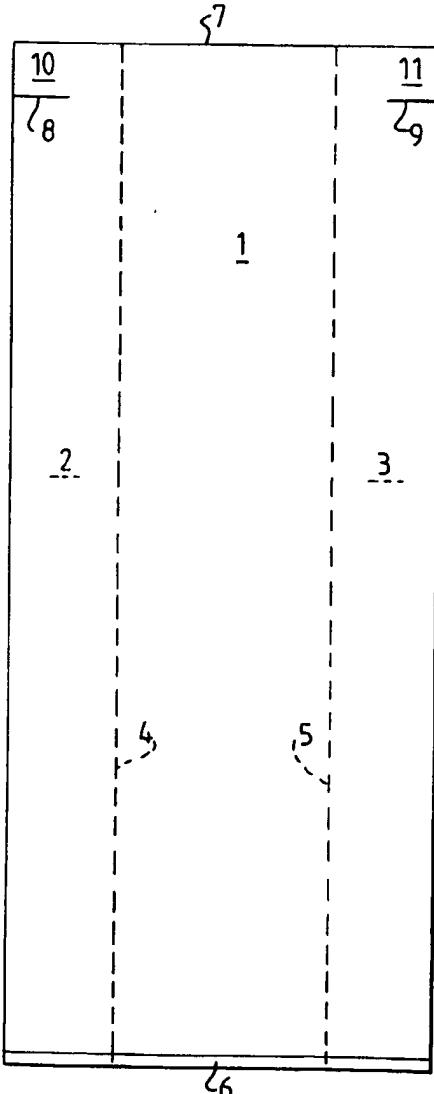
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⑳ Designated Contracting States :  
**AT CH DE DK ES FR GB GR IT LI SE**

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㉒ Easily sealable bag or sack.

㉓ A sack or a bag (1) of sheet material is provided with at least two incisions (8, 9) near its open end (7), said incisions being situated essentially opposite each other and extending essentially at right angles to the longitudinal direction of the bag or sack. Through these incisions (8, 9) are formed at least two lappets (10, 11) which can be tied together for sealing the bag or sack.



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The present invention relates to a package, and more particularly to a bag or a sack which is easily sealable. Especially, the invention relates to such a sack which is made as a waste bag for the handling of refuse.

Bags and sacks of sheet material, especially of plastic foil, have found a very wide-spread use in the packing of many different products. One very large use is as bags for the packaging of food articles and other consumer goods in stores. Another use of increasing importance is as sacks for waste or refuse. Such sacks are finding an increased use in the handling of waste, such as in municipal waste handling.

The prior art bags and sacks may have various shapes, depending on the intended use. They are usually manufactured from a tube of sheet material which is closed by a transversal weld at the bottom of the bag or sack. At their open end, bags for consumer use are most often shaped in such a way that carrying handles are provided, for instance by punching out holes in the wall of the bag. Sacks for the handling of waste are often shaped at their open end such that they can be hung up on a stand of a conventional type. To increase their capacity, bags and sacks are often provided with longitudinal folds in their sides.

It is often desirable to be able to seal a filled bag or sack, so that nothing of its contents can escape. This is of a special importance when leaking contents may create damage or a nuisance, such as in the handling of waste. In the home, used bags for consumer goods will often serve for the collection and storing of household waste, and in these cases, the carrying handle arrangements of the bags will serve more or less suitably for tying up the bag when it is full and is to be discarded.

For bigger sacks, such as those for the handling of waste, the problem of obtaining a simple and secure sealing becomes more difficult. The carrying devices in the shape of various types of handles, which may be used for tying up bags for consumer goods, are not suitable to be arranged in the larger embodiments which are necessary for bigger sacks.

Thus, SE-A-209 307 describes a bag which is manufactured from a tube of plastic foil, which is provided with longitudinal folds or pleats in its sides, and which is sealed at its bottom by a transversal welding seam. A transversal weld is also provided at the upper end of the bag, but here a rectangular piece has been punched out, such that an opening and two carrying handles have been formed. This so-called "brace bag" has found a very wide use, but it has the disadvantage that a considerable amount of material is wasted when the rectangular piece is punched out. If one tries to manufacture a bigger sack with the same shape, the waste will of course be still greater, and, additionally, such a sack is less suitable to be hung up in a stand of a conventional type.

Other bags for consumer goods are provided at

their opening with a ribbon or strip, which runs in a tube which has been formed by folding and sealing the upper edge of the bag. Such a ribbon is primarily intended as a carrying handle, but may also serve as a tying ribbon for sealing the bag. However, this arrangement is rather costly, and is therefore not suitable for use in bigger sacks.

Through the present invention, the disadvantages mentioned above are eliminated, and a bag or sack of sheet material is provided which by means of a simple arrangement at its open end may be easily sealed even in bigger bags or sacks. The bag or sack of the invention is also simple to manufacture and only requires small modifications of the conventional apparatus for the manufacture.

According to the invention, a bag or a sack of sheet material is provided, which is characterized in that it near its opening is provided with at least two incisions in the wall of the bag or the sack, said incisions being situated essentially opposite each other and extending essentially at right angles to the longitudinal direction of the bag or the sack, such that at least two lappets are formed for tying the bag or the sack together.

The bag or the sack is preferably made from a tube of sheet material, which is sealed by a welding seam at the bottom of the bag or the sack. Furthermore, the bag or the sack is preferably provided with longitudinal folds in its wall, and the incisions are preferably arranged in said folds.

In the drawing, the sole figure shows a bag or a sack in accordance with the invention in a flat state, such as it is usually delivered to users. The bag or the sack consists of a tube 1 of a sheet material, preferably plastic foil or film. It is provided with two longitudinal folds 2 and 3, the inward-facing edges of which are shown at 4 and 5. At its bottom, the bag or the sack is sealed by a transversal welding seam 6.

Near the open end 7 of the bag or the sack are provided incisions or perforations 8 and 9, which preferably penetrate through all the layers of materials in the folds 2 and 3. In a preferred embodiment, the incisions 8 and 9 do not extend over the edges 4 and 5 of the inward-facing folds.

The incisions 8 and 9 are arranged essentially opposite each other along the circumference of the opened bag or sack, and they extend at essentially right angles to the longitudinal direction of the bag or the sack. However, small deviations in these respects are of no practical importance.

Through the incisions 8 and 9 are formed lappets 10 and 11, which may be used for sealing the bag or the sack by tying them together. The incisions are therefore suitably made so long that the lappets may be easily tied together. However, they should not be made too long, as this may cause a larger part of the opening of the bag or the sack to be situated outside of part tied together, which will increase the risk of

leaks. For the same reason, the incisions should preferably not extend over the edge of the inward-facing fold. When the incisions do not extend over said inward-facing fold, each of the incisions gives two lappets, which may be tied together with the corresponding two lappets at the opposite edge of the bag or the sack. This gives a more secure seal, as four lappets are provided, which may be tied together two and two.

The length of the incisions 8 and 9, as well as their distance from the open end 7 of the bag or the sack may easily be determined by a person skilled in the art, taking into account such factors as the size of the bag or the sack and the strength properties of the sheet material.

As the sheet material for the bag or the sack is primarily used a plastic material which may be worked to a foil or film having suitable properties. Polyolefins have turned out to be especially suitable here, and preferably polyethylene and polypropylene, and copolymers with these. A great number of such polyolefin materials of different qualities are commercially available, and the person skilled in the art can easily select one that corresponds to the requirements set on the bag or the sack. However, halogen-containing polymer materials should be avoided, as bags and sacks for the handling of waste are usually destructed by burning, whereby harmful halogen compounds may be formed, such as hydrogen halides.

The foil material may also contain conventional additives and auxiliary substances, such as pigments, UV protecting agents, tack inhibitors, friction increasing agents and the like, as is well-known to those skilled in the art.

Bags and sacks according to the invention may easily be manufactured in conventional apparatus for the manufacture of prior art bags and sacks. Usually a tube of the sheet material is prepared by blow extrusion, and the tube is then provided with folds, cut, welded and punched into a finished bag or sack in a known way. The only addition necessary is a suitably arranged punching device, which punches out the incisions in the sides of the bags at a suitable stage in the manufacturing process. For a person skilled in the art, there are no difficulties in suitably modifying a conventional apparatus for the manufacture of bags and sacks of the invention.

Bags and sacks according to the invention may be manufactured in very different sizes, but the advantages obtained through the invention are most apparent in bigger sacks, such as waste sacks of a standard type, which have a volume of about 150 liters, and which are intended to be hung up in stands of a conventional type. The advantages of the invention, however, are also obtained in bags and sacks of other sizes and types, as long as they are provided with the incisions according to the invention. Also, the borderline between what should be regarded as a "sack" and a "bag" is rather indefinite, and these expressions are

not intended to have any limiting meaning.

In the foregoing specification, bags and sacks according to the invention have primarily been described with reference to the embodiment shown in the drawing and to the preferred embodiment for use as a sack for the handling of waste. However, those skilled in the art will realize that the invention is not limited to these embodiments only, but that many others are possible within the scope of the claims.

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## Claims

15 1. A bag or a sack of sheet material, characterized in that near its opening, it is provided with at least two incisions in the wall of said bag or sack, said incisions being situated essentially opposite each other and extending at essentially right angles to the longitudinal direction of said bag or sack, such that at least two lappets are formed for tying together the bag or sack.

20 2. A bag or a sack according to claim 1, characterized in that it is manufactured from a tube of a sheet material, said tube being sealed at the bottom of said bag or sack by a welding seam.

25 3. A bag or a sack according to claim 1 or 2, characterized in that it is provided with longitudinal folds in its wall.

30 4. A bag or a sack according to claim 3, characterized in that the incisions are arranged in said folds.

35 5. A bag or a sack according to claim 4, characterized in that said incisions do not extend to the edge of the inward-facing fold in each of said folds.

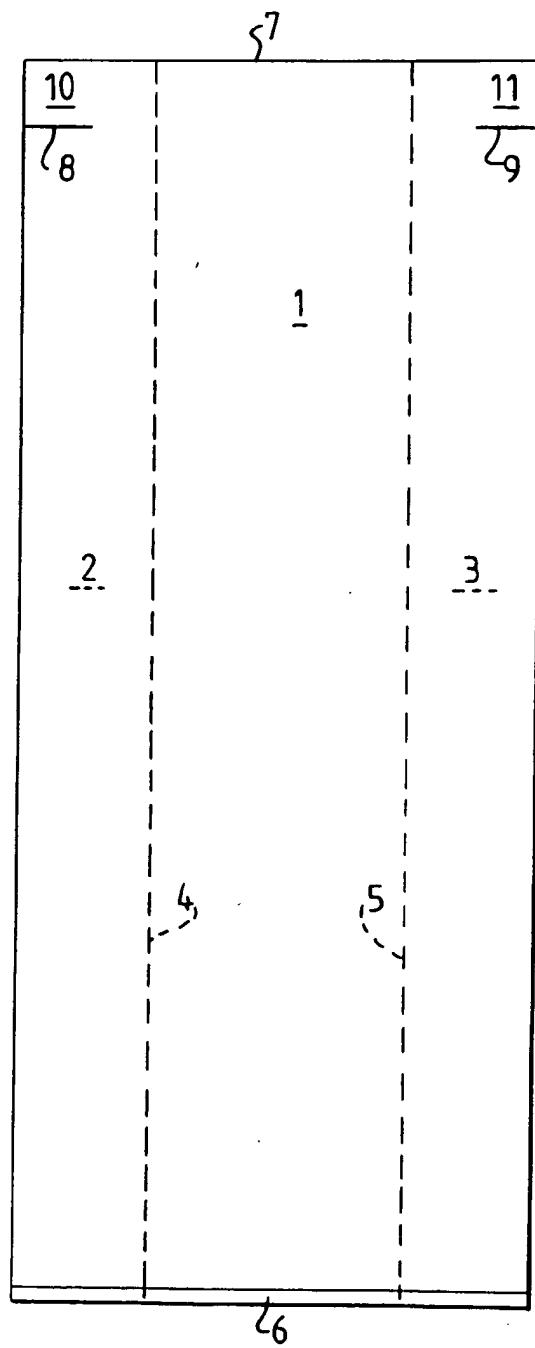
6. A bag or a sack according to any of claims 1-5, characterized in that it is manufactured from a plastic foil material, preferably polyolefin, such as polyethylene or polypropylene.

40 7. A bag or a sack according to any of claims 1-6, characterized in that it is arranged as sack for the handling of waste.

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## EUROPEAN SEARCH REPORT

Application Number

EP 92 85 0147

DOCUMENTS CONSIDERED TO BE RELEVANT									
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)						
X	WO-A-9 008 071 (SUNROCK)	1,6,7	B65D33/16						
Y	* page 8 -paragraph 1; figure 8 *	3-5							
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Y	FR-A-1 496 589 (H.PANNEBECKER)	3-5							
A	* column 3, line 36 - line 48; figures 3,4	1,2,6,7							
	*								
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			TECHNICAL FIELDS SEARCHED (Int. Cl.5)						
			B65D						
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>14 OCTOBER 1992</td> <td>AMEDEO ZANGHI</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	14 OCTOBER 1992	AMEDEO ZANGHI
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THE HAGUE	14 OCTOBER 1992	AMEDEO ZANGHI							
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone      Y : particularly relevant if combined with another document of the same category      A : technological background      O : non-written disclosure      P : intermediate document</p> <p>T : theory or principle underlying the invention      E : earlier patent document, but published on, or after the filing date      D : document cited in the application      L : document cited for other reasons      &amp; : member of the same patent family, corresponding document</p>									